IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application   : **09/885,707**

Applicant(s)   : **OOMEN et al.**

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Examiner   : **OPSASNICK, Michael N.**

Atty. Docket   : **NL-000332**

Title: **SINUSOIDAL CODING**

Mail Stop: **APPEAL BRIEF - PATENTS**
Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL UNDER 37 CFR 41.37

Sir:

    This is an appeal from the decision of the Examiner dated 22 June 2007, finally rejecting claims 1-8 and 11-12 of the subject application.

    This paper includes (each beginning on a separate sheet):

1. **Appeal Brief;**
2. **Claims Appendix;**
3. **Evidence Appendix; and**
4. **Related Proceedings Appendix.**

APPEAL BRIEF

I. REAL PARTY IN INTEREST

The above-identified application is assigned, in its entirety, to **Koninklijke Philips Electronics N. V.**

II. RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any co-pending appeal or interference that will directly affect, or be directly affected by, or have any bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 9-10 are canceled.

Claims 1-8 and 11-12 are pending in the application.

Claims 1-8 and 11-12 stand rejected by the Examiner under 35 U.S.C. 101. These rejected claims are the subject of this appeal.

IV. STATUS OF AMENDMENTS

An amendment was filed and admitted subsequent to the final rejection in the Office Action dated 22 June 2007 on 8 August 2007.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention addresses the encoding and decoding of audio signals. The audio signal is analyzed to determine frequency and amplitude parameters of one or more sinusoidal components of the signal, and these parameters are communicated to an audio player, in lieu of the actual sinusoidal components (page 4, lines 13-16). Additionally, a phase jitter of the sinusoidal component is also communicated to the player, to allow the player to produce a more natural sounding reproduction of the original audio signal (page 2, lines 5-10).

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As claimed in independent claim 1, the invention comprises a method of encoding a signal, the method comprising (FIG. 1):

determining (20) frequency (f) and amplitude (a) information of at least one sinusoidal component in the signal (A) (page 4, lines 13-15);

transmitting (A') sinusoidal parameters representing the frequency (f) and amplitude (a) information (page 4, lines 15-18); and

transmitting a phase jitter (p) parameter representing an amount of phase jitter that should be added during restoring the sinusoidal component from the transmitted sinusoidal parameters (page 4, lines 26-28).

As claimed in independent claim 5, the invention comprises a method of decoding an encoded signal, the method comprising (FIG. 2):

receiving (40) sinusoidal parameters representing frequency (f) and amplitude (a) information of at least one sinusoidal component (page 4, lines 31-34);

restoring (41) the at least one sinusoidal component (S') from the sinusoidal parameters (page 4, line 34 – page 5, line 3);

receiving (40) a phase jitter parameter (p) (page 4, lines 31-34); and

adding an amount of phase jitter to the sinusoidal component (S'), which amount of phase jitter is derived from the phase jitter parameter (page 5, lines 5-8).

As claimed in independent claim 6, the invention comprises (FIG. 1) an audio coder (2) comprising:

means (20) for determining frequency (f) and amplitude (a) information of at least one sinusoidal component in a signal (page 4, lines 13-15);

means (21) for transmitting sinusoidal parameters representing the frequency (f) and amplitude (a) information (page 4, lines 15-18); and

means (21) for transmitting a phase jitter parameter (p) representing an amount of phase jitter that should be added during restoring the sinusoidal component from the transmitted sinusoidal parameters (page 4, lines 26-28).

As claimed in independent claim 7, the invention comprises (FIG. 2) an audio player (3) comprising:

means (40) for receiving an encoded signal (A') representative of a sound recording, the encoded signal (A') including sinusoidal parameters representing frequency (a) and amplitude (a) information of at least one sinusoidal component (page 4, lines 31-34);

means (41) for restoring the at least one sinusoidal component (S') from the sinusoidal parameters (page 4, line 34 – page 5, line 3);

means (40) for receiving a phase jitter parameter (p); and

means (41) for adding an amount of phase jitter to the sinusoidal component, which amount of phase jitter is derived from the phase jitter parameter (page 5, lines 5-8).

As claimed in independent claim 12, the invention comprises a storage medium (3) (page 4, lines 16-18) containing an encoded signal (A') comprising sinusoidal parameters representing frequency (f) and amplitude (a) information of at least one sinusoidal component (page 4, lines 12-16) and further comprising a phase jitter (p) parameter representing an amount of phase jitter that should be added during restoring the sinusoidal component from the sinusoidal parameters (page 4, lines 23-28), said signal representing speech data and analyzable in the practical application of speech processing (page 3, lines 26-27).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-8 and 11-12 stand rejected under 35 U.S.C. 101.

VII. ARGUMENT

Claims 1-8 and 11-12 stand rejected under 35 U.S.C. 101

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." **35 U.S.C. 101**.

Claims 1-4

Claim 1, upon which claims 2-4 depend, claims a method of encoding a signal that includes determining and transmitting parameters that facilitate restoration of a signal based on these parameters.

The Office action asserts that the process of claim 1 "merely manipulates a signal via a mathematical algorithm without a claimed limitation to a practical application". The applicants respectfully disagree with this assertion.

The process of claim 1 does not "merely manipulate a signal"; claim 1 specifically recites transmitting parameters of the signal. The process of transmitting the parameters has a practical application: it allows a receiving device to recreate the signal based on these transmitted parameters. In particular, by transmitting frequency and amplitude parameters of a signal, in lieu of the actual continuously changing sinusoidal signal, the transmission bit-rate is substantially reduced. Similarly, by transmitting a phase jitter parameter, the receiving system is able to produce a more natural sounding reproduction of the original audio signal. The applicants respectfully maintain that reducing a transmission bit-rate and allowing for a more natural sounding reproduction are useful and practical applications provided by the claimed process.

Because claim 1 claims a new and useful process, the applicants respectfully maintain that the rejection of claims 1-4 under 35 U.S.C. 101 is unfounded and should be reversed by the Board.

Claim 5

The Office action asserts that the process of claim 5 "merely manipulates a signal via a mathematical algorithm without a claimed limitation to a practical application". The applicants respectfully disagree with this assertion.

Claim 5 claims a method that includes receiving a phase jitter parameter and adding an amount of phase jitter derived from the parameter to a restored sinusoidal component. As specifically taught by the applicants, by adding the phase jitter to the restored sinusoidal component, a more natural sound can be produced. The applicants respectfully maintain that obtaining a more natural sound of a restored sinusoidal component of an audio signal is a useful and practical application provided by the claimed process.

Because claim 5 claims a new and useful process, the applicants respectfully maintain that the rejection of claim 5 under 35 U.S.C. 101 is unfounded and should be reversed by the Board.

Claims 6 and 8

The Office action asserts that claim 6 defines a non-statutory process (Office action, page 2, first sentence of second paragraph of section 2).

Claim 6 is a product claim, not a process claim. Therefore, claim 6 cannot, per se, define a non-statutory process.

Claim 6, upon which claim 8 depends, claims an audio encoder that includes means for transmitting parameters of a signal, at least one practical application of which is clearly defined in the applicants' specification (page 2, lines 7-11). Accordingly, because claim 6 defines a new and useful product, the applicants respectfully maintain that the rejection of claims 6 and 8 under 35 U.S.C. 101 is unfounded and should be reversed by the Board.

Claims 7 and 11

The Office action asserts that claim 7 defines a non-statutory process (Office action, page 2, first sentence of second paragraph of section 2).

Claim 7 is a product claim, not a process claim. Therefore, claim 7 cannot, per se, define a non-statutory process.

Claim 7, upon which claim 11 depends, claims an audio player that includes means for means for adding an amount of phase jitter to a restored sinusoidal component, based on a received phase jitter parameter. A benefit of adding this phase jitter is clearly defined in the applicants' specification (page 2, lines 7-11). Accordingly, because claim 7 defines a new and useful product, the applicants respectfully maintain that the rejection of claims 7 and 11 under 35 U.S.C. 101 is unfounded and should be reversed by the Board.

Claim 12

The Office action asserts that because claim 12 does not "define any structural and functional interrelationship between a storage medium and a computer which would permit the storage medium's functionality to be realized", claim 12 is directed to non-statutory subject matter (Office action, page 2, last sentence of section 2). The applicants respectfully disagree with this assertion.

Claim 12 claims a storage medium that contains sinusoidal parameters representing frequency, amplitude, and phase jitter information of a sinusoidal component of a signal that represents speech data and is analyzable in speech processing. This storage medium is an item of manufacture that serves the useful purpose of transferring an encoding of an audio signal from an audio encoded to an audio player.

Because claim 12 defines a new and useful manufacture, the applicants respectfully maintain that the rejection of claim 12 under 35 U.S.C. 101 is unfounded and should be reversed by the Board.

CONCLUSIONS

Because each of the applicants' claims define a new and useful process, machine, or manufacture, the applicants respectfully request that the Examiner's rejection of claims 1-8 and 11-12 under 35 U.S.C. 101 be reversed by the Board, and the claims be allowed to pass to issue.

Respectfully submitted

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CLAIMS APPENDIX

1. A method of encoding a signal, the method comprising:

    determining frequency and amplitude information of at least one sinusoidal component in the signal;

    transmitting sinusoidal parameters representing the frequency and amplitude information; and

    transmitting a phase jitter parameter representing an amount of phase jitter that should be added during restoring the sinusoidal component from the transmitted sinusoidal parameters.

2. The method of claim 1, wherein the phase jitter parameter is transmitted approximately together with the sinusoidal parameters at a first instance of a track.

3. The method of claim 1, wherein a phase jitter parameter is transmitted for a given group of sinusoidal components, which sinusoidal components have harmonically related frequencies.

4. The method of claim 1, further comprising:

    determining a difference between a phase of the sinusoidal component and a predicted phase, which predicted phase is calculated from the transmitted sinusoidal parameters and a phase continuation requirement; and

    deriving the phase jitter parameter from said difference.

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5. A method of decoding an encoded signal, the method comprising:

receiving sinusoidal parameters representing frequency and amplitude information of at least one sinusoidal component;

restoring the at least one sinusoidal component from the sinusoidal parameters;

receiving a phase jitter parameter; and

adding an amount of phase jitter to the sinusoidal component, which amount of phase jitter is derived from the phase jitter parameter.

6. An audio coder comprising:

means for determining frequency and amplitude information of at least one sinusoidal component in the signal;

means for transmitting sinusoidal parameters representing the frequency and amplitude information;

and

means for transmitting a phase jitter parameter representing an amount of phase jitter that should be added during restoring the sinusoidal component from the transmitted sinusoidal parameters.

7. An audio player comprising:

means for receiving an encoded signal representative of a sound recording, the encoded signal including sinusoidal parameters representing frequency and amplitude information of at least one sinusoidal component;

means for restoring the at least one sinusoidal component from the sinusoidal parameters;

means for receiving a phase jitter parameter; and

means for adding an amount of phase jitter to the sinusoidal component, which amount of phase jitter is derived from the phase jitter parameter.

8. An audio system comprising the audio coder of claim 6.

9-10 (Canceled)

11. An audio system comprising the audio player of claim 7.

12. A storage medium containing an encoded signal comprising sinusoidal parameters representing frequency and amplitude information of at least one sinusoidal component and further comprising a phase jitter parameter representing an amount of phase jitter that should be added during restoring the sinusoidal component from the sinusoidal parameters, said signal representing speech data and analyzable in the practical application of speech processing.

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EVIDENCE APPENDIX

No evidence has been submitted that is relied upon by the appellant in this appeal.

RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have any bearing on the Board's decision in the pending appeal.